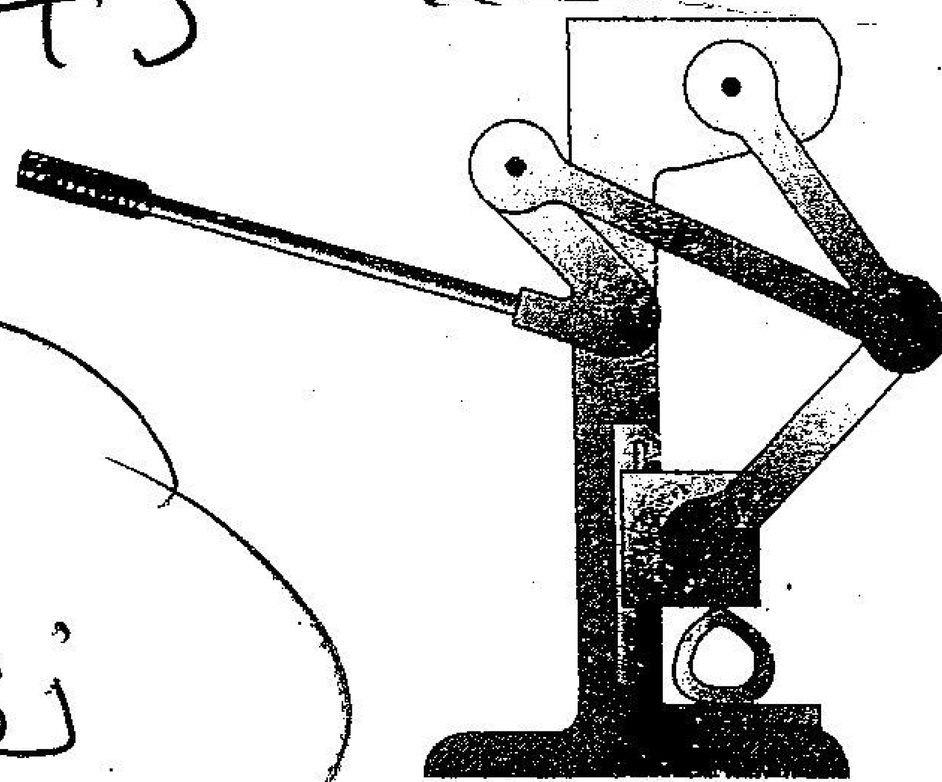
هندسة الميكاترونكس	التخصص والمستوى :		**دولة فلسطين**
نظرية الالات الميكانيكية	اسم المساق :		**وزارة التربية والتعليم العالي** MINISTRY OF EDUCATION & HIGHER EDUCATION
-٥-٢٠١٣	تاريخ الامتحان :		**جامعة فلسطين التقنية "خضوري"**
ساعة	زمن الامتحان :	م. مهنا عبيد	**الفصل الثاني ٢٠١٢-٢٠١٣** **الامتحان الاول**

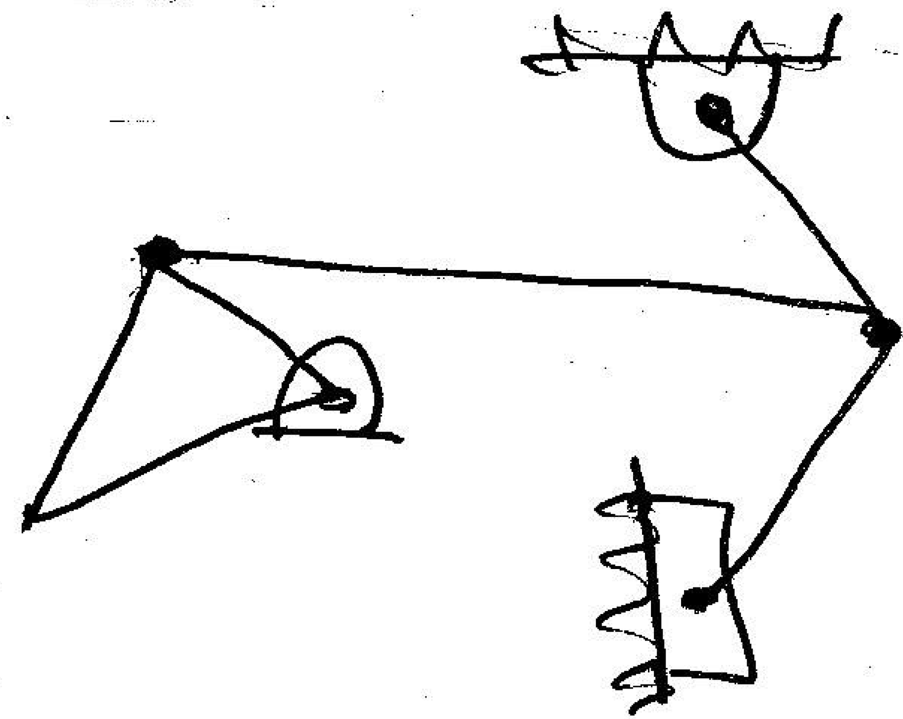
[redacted]

Q1. The Figure below shows a device that can be used to exert large forces to insert a small part Into a large one . Draw the kinematic diagram showing all the links and joints. Calculate the degrees of freedom (mobility) for this mechanism. **8 marks**

n=6, j=7 → f=1

الامتحان الأول
نظرية الآلات



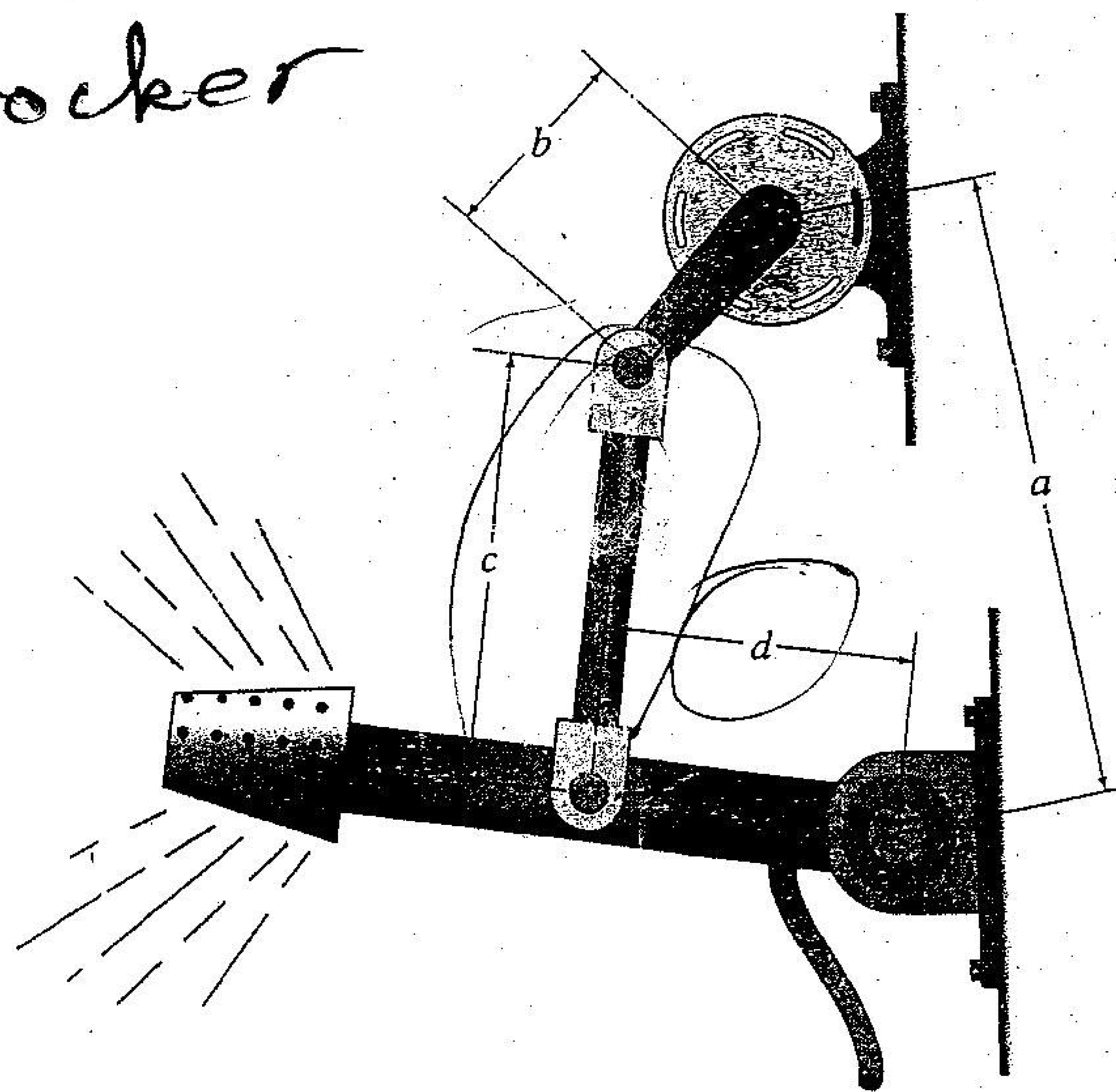


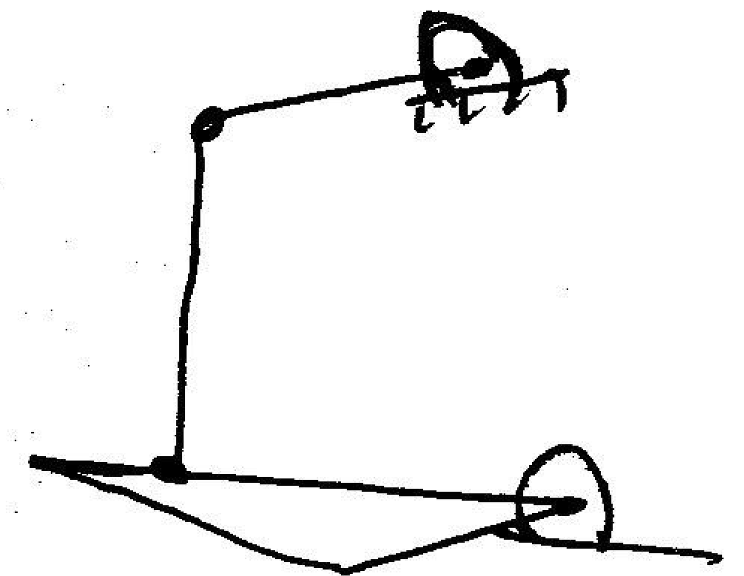
frame double crank
side crank rocker
double rocker
coupler
change point
triple rocker

Q2. A mechanism to spray water onto vehicles at an automated car wash is shown below.
1- Draw the kinematic diagram.
2- Classify this four bar mechanism, based on its possible motion, when the lengths of the links are :
1- a = 12 in, b = 1.5 in, c = 14 in and d = 4 in
2- a = 12 in, b = 5 in, c = 12 in and d = 4 in

8 marks

1. crank rocker
2. crank rocker





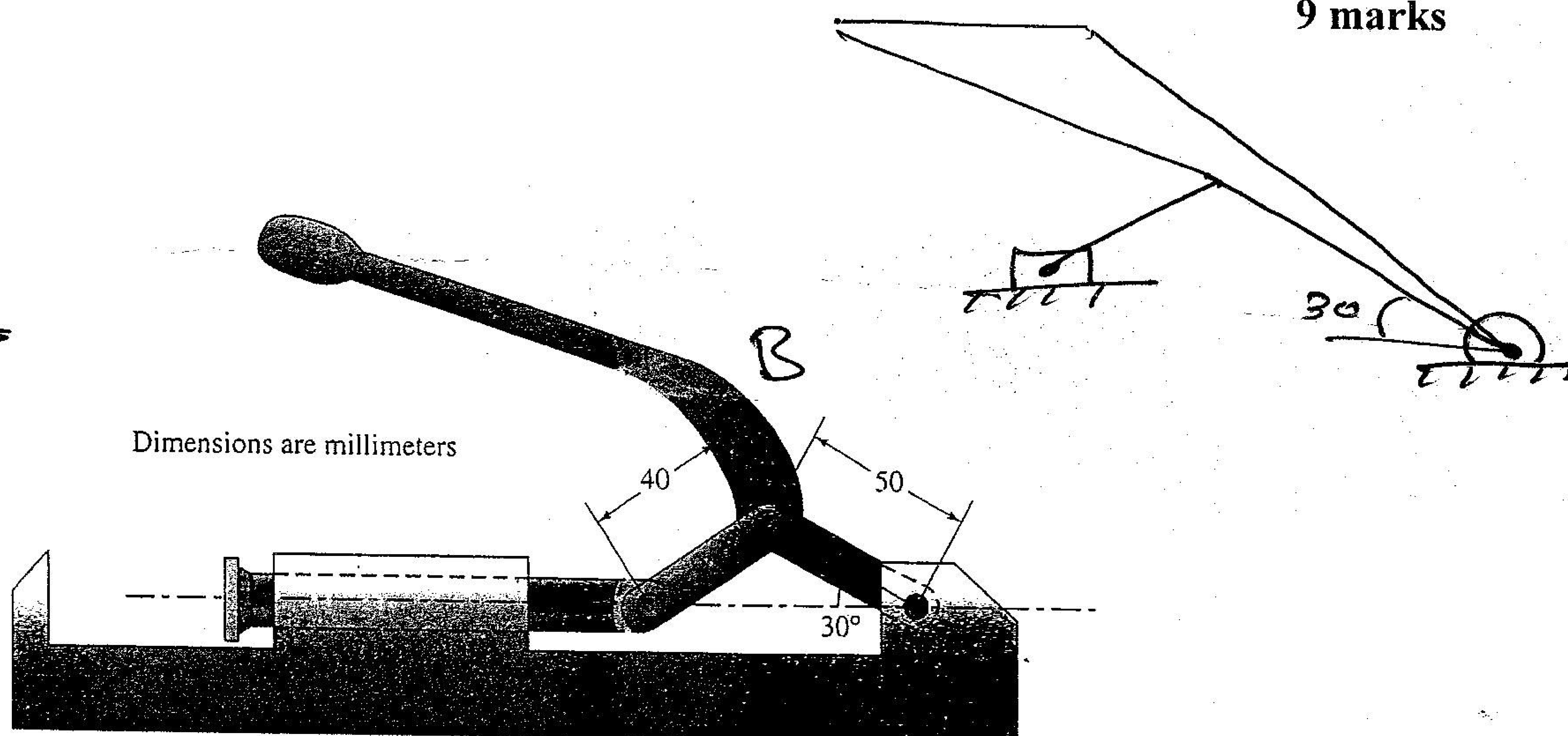
side → crank - rocker

Q3. Toggle clamp mechanism shown is used to securely hold parts, draw the kinematic diagram for this mechanism.

Analytically determine the displacement of the clamp surface as the handle rotates downward (counterclockwise)

1- 15 °. 2- 30 °

9 marks

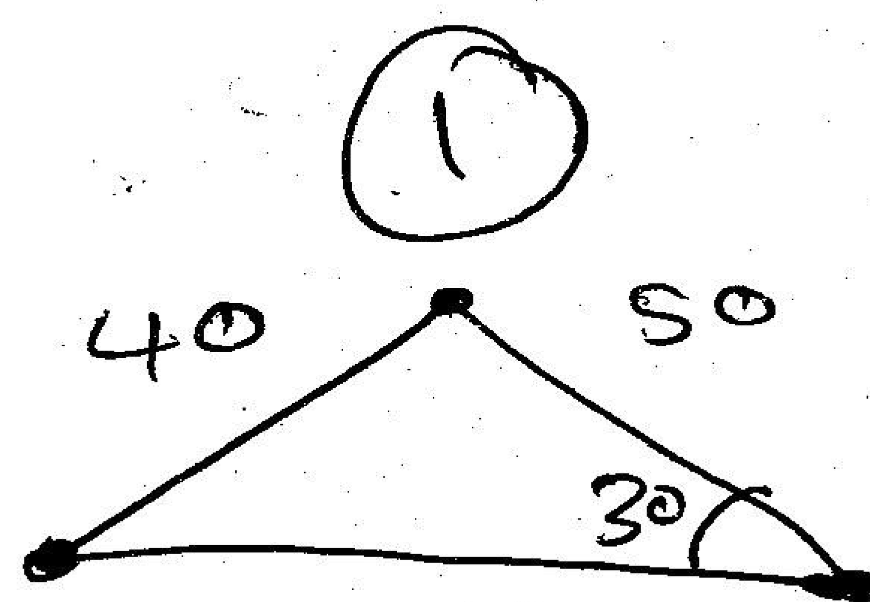


A C

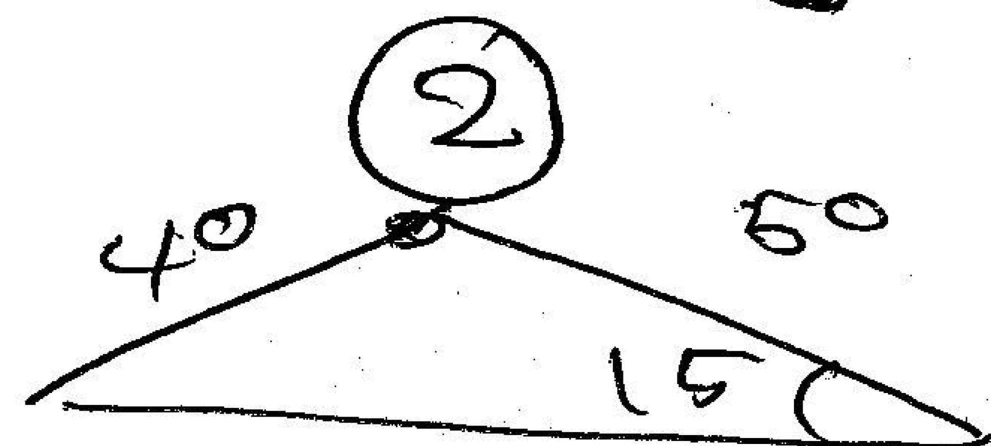
AC = 74.53
A'C = 86.14
→ 11.61

A''C = 90
→ 15.47

(1)



(2)



(3)

